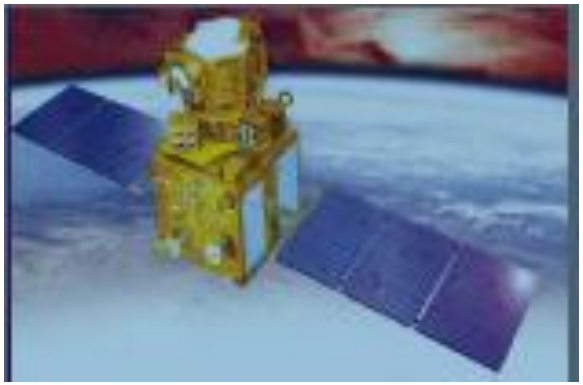
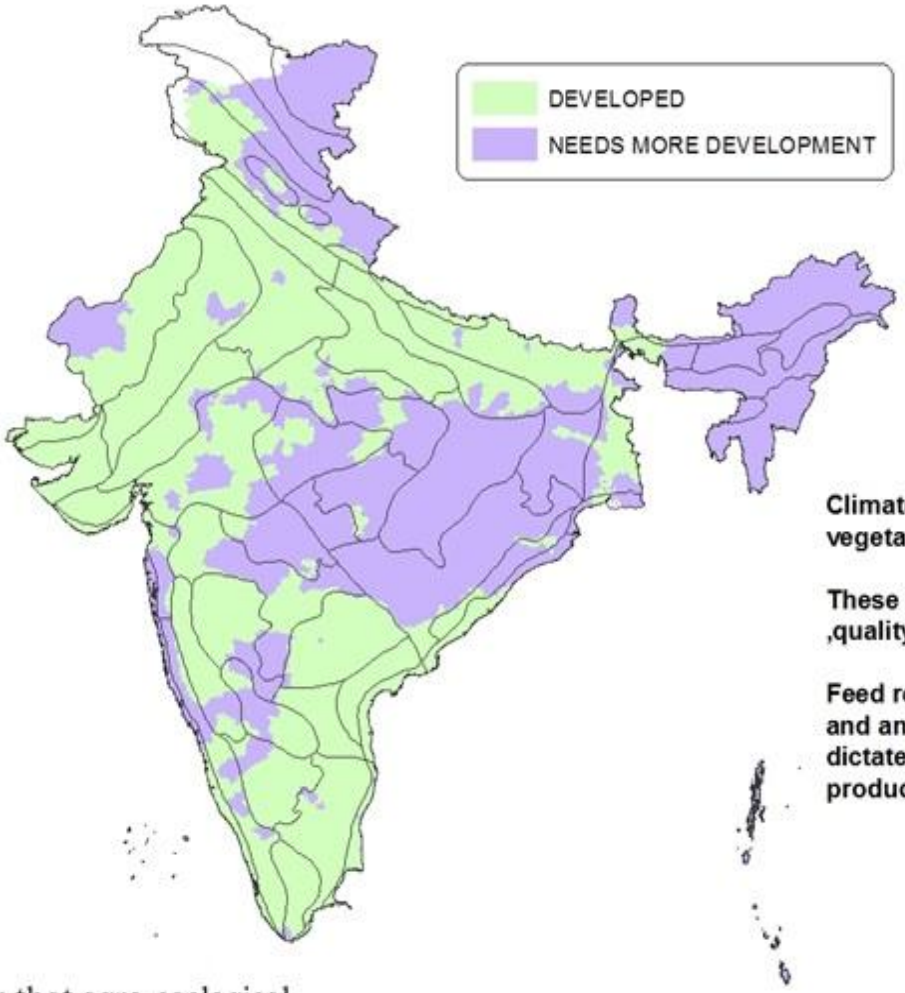
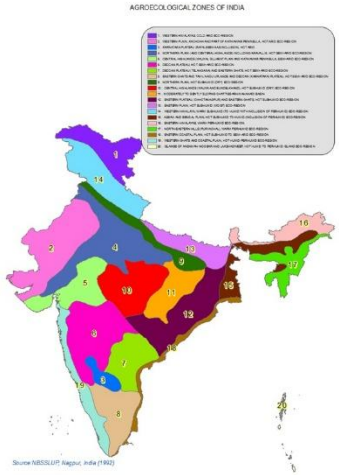
Use of remote sensing in the dairy sector



AGROECOLOGICAL REGIONS MAPPED ON THE DAIRY POTENTIAL AREAS





Climate and to a large extent soil affect natural vegetation and determine what crops can be grown.

These in turn determine the feed base and its quantity ,quality and distribution.

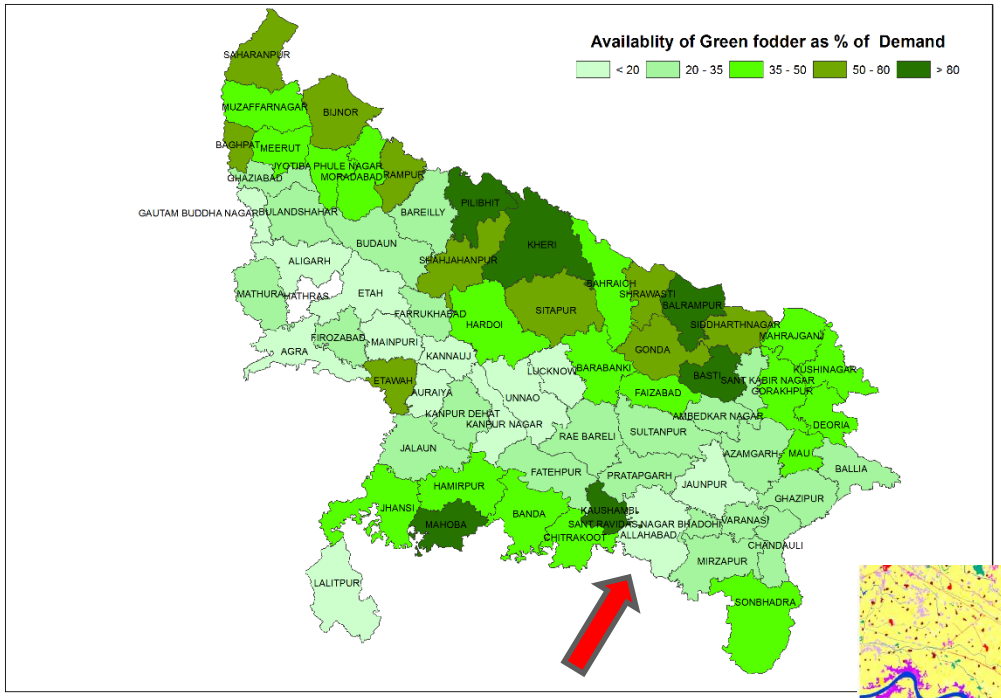
Feed resources provide a direct link between crops and animals and the interaction of the two largely dictates the development of such crop-animal production systems.

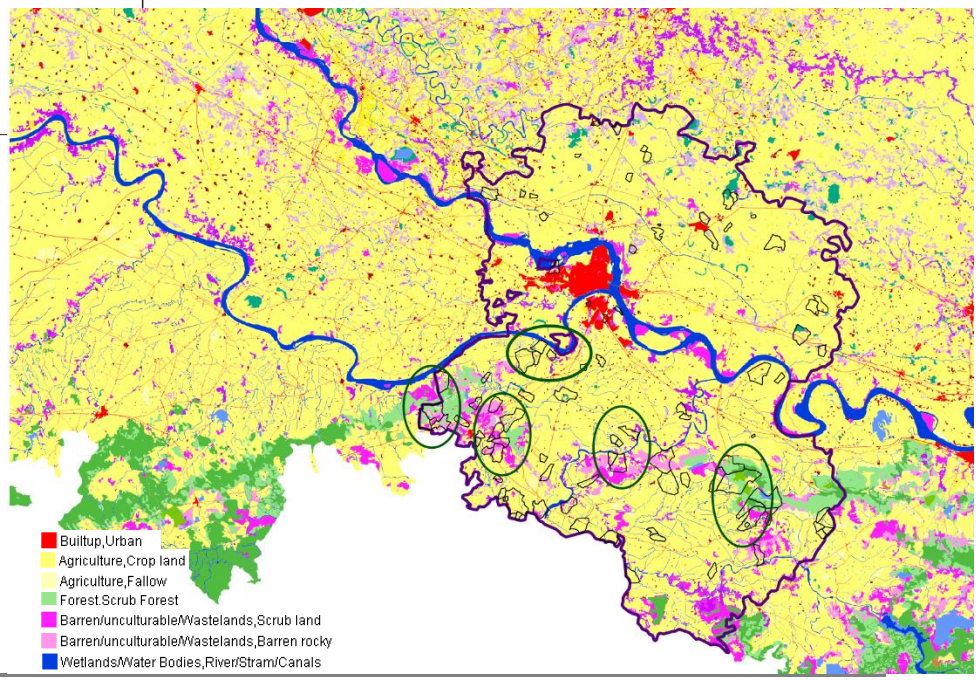
Empirical evidence show that agro-ecological conditions have played a key role in determining dairy potential in our country, being equally important (if not perhaps more so) as those determinants like technology adoption, agricultural infrastructure, state development expenditures and ethnicity.

Under National Livestock Mission (NLM) ,
the Sub-Mission on Feed and Fodder development program (Item 7.3.1) has targets **to develop Non-Forest lands for fodder production**, with the following **objectives**:

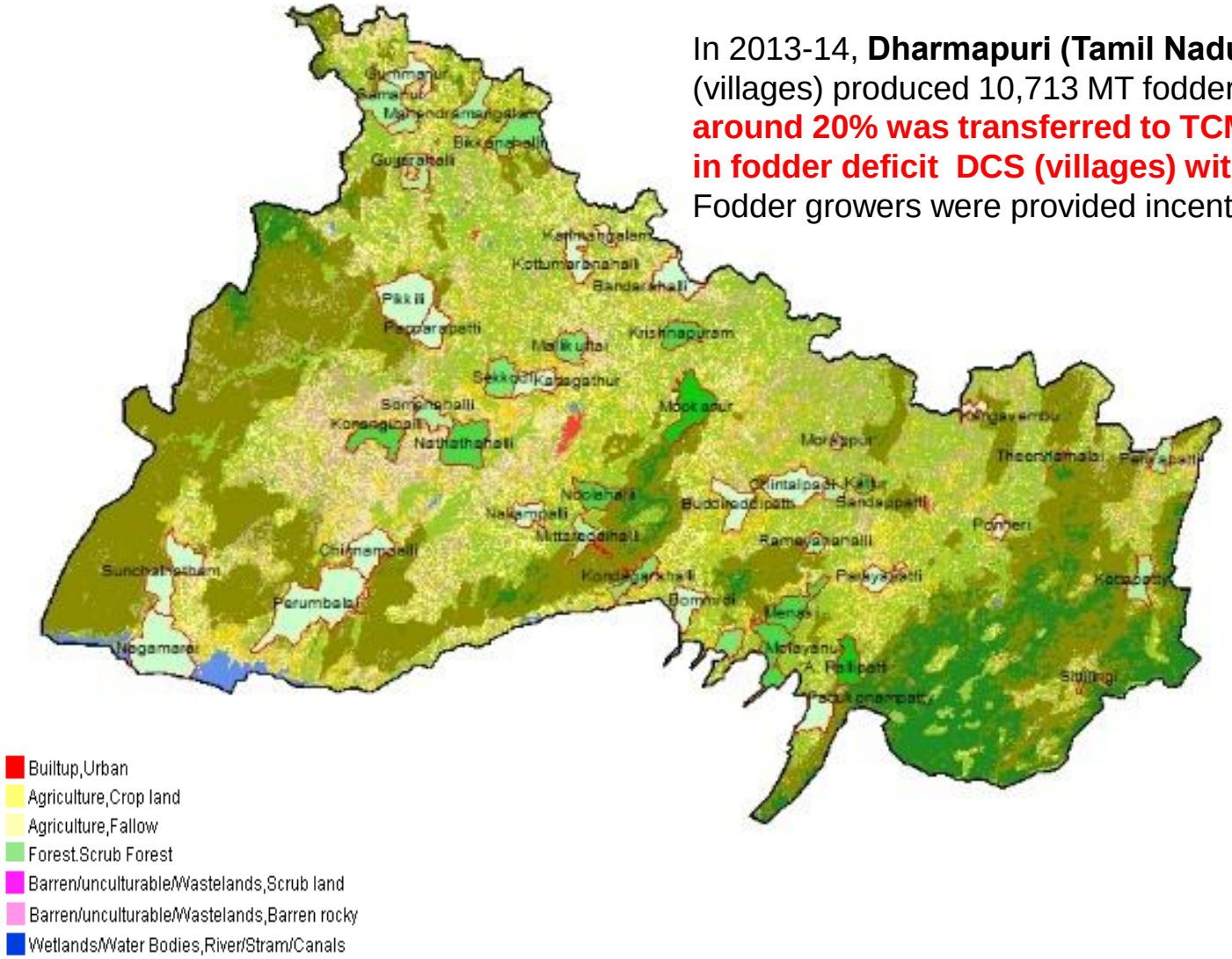
- Rehabilitation of degraded Non-forest wasteland / rangeland / grassland / non-arable land by introducing suitable grass, legumes and fodder trees
- Increasing production of palatable grasses / legumes / tree leaves
- Production of bio-mass to minimize the gap between availability and requirement of fodder
- Creating surplus reserve of forage for use during lean periods / crisis situations

Motivation I: Assist Milk Unions/Federations in finding suitable lands for creating Fodder Hubs in their milkshed areas under the National Livestock Mission





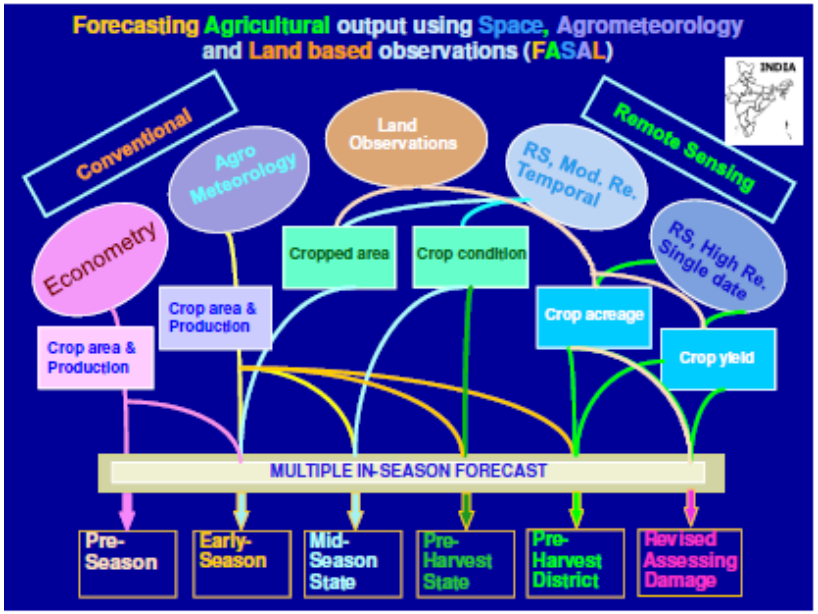
Identifying potential clusters/hubs for fodder development activities in Allahabad District, Uttar Pradesh using remote sensing (Land Use Land Cover satellite imageries)



In 2013-14, **Dharmapuri (Tamil Nadu) districts'** 46 DCS (villages) produced 10,713 MT fodder, **out of which around 20% was transferred to TCMPF for distribution in fodder deficit DCS (villages) within the district**. Fodder growers were provided incentives under the AFDP.

Motivation II: Accelerated Fodder Development Program (AFDP), scheme under RKVY can be emulated in large scale by Milk Unions/Federations,

NDDB & ISRO will work together to build a village level dynamic geo-database for the major milk producing states, which will include biomass indicators, Land Use Land Cover and precipitation.



FASAL Concept: The diagram above illustrates the various sources of data, timing of input and analysis, interlinkages and preharvest estimate time in relation to crop stage

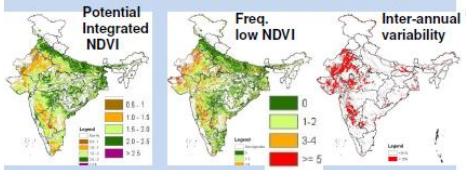
Drought Assessment

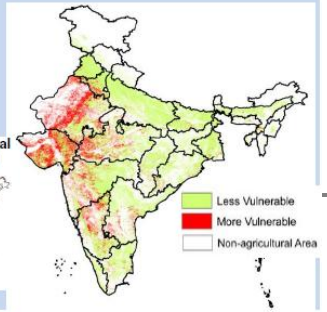
- NADAM - Operational drought assessment is being made by MNCFC.
- Agricultural drought vulnerability Analysis with time series NDVI.
- Agricultural Drought Vulnerability is referred as exposure, sensitivity and adaptability of agricultural area to the reduced soil moisture availability.
- 1173 blocks in 185 districts of 13 states – 120 M ha as drought prone.

Usage/Application

- Sub-district level planning for drought.
- Preparing contingency plan.
- Longterm strategies

Time series NDVI derived metrics





Crop Production Forecasts – Cont'd

Forecasting Agricultural output using Space, Agrometeorology and Land based observations (FASAL)

FOCUS

FASAL- operational -multi-forecast

- Rice (Kharif & Rabi)
- Jute
- Wheat
- Rapeseed / Mustard
- Winter potato

In the developmental stage-II

- Sugarcane- AWiFS(K)
- Cotton- SAR/AWiFS(K)

In the developmental stage-I

- Sorghum (KR)
- Maize(K)
- Pearl Millet (K)
- Finger Millet (K)
- Groundnut- (KR)

Outputs

Sugarcane:

- Early area estimation of Sugarcane crop, two estimates (UP, Maharashtra, Gujarat, Karnataka).
- Current year first estimate for UP and Maharashtra is complete.

Cotton :

Identification using multidate SAR data, analysis is in progress

Inputs from State agencies:

Early inputs on location information on current seasons increase/decrease for groundtruth

Increase area under green fodder by identifying suitable areas

- Identification of fallow lands suitable for fodder cultivation including rice fallows where ever available
- Use of satellite Images and ground verification for the above .
- Identify the current fallows where short term fodder crops can be grown in summer season.
- Capturing areas stressed for fodder production.

Climate change and mapping vulnerable areas in the major dairying states.

- Assess the climate change for major dairying states in next 5-10 years with respect to animal health and availability of feed and fodder.

- Prepare a vulnerability index at a suitable level based on change in water availability, temperature, rainfall, salinity ingress, rise in sea levels etc.